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ABSTRACT

Text, illustrations, and exercises are utilized in these four learning modules to teach dental hygiene students, nursing students, and the general public how to measure blood pressure. The first module, "Can You Take a Blood Pressure?" by Carolyn Lancaster, defines blood pressure, distinguishes between systolic and diastolic pressure and lists the equipment needed to take a blood pressure reading. The second and third modules, "How to Measure Your Own Blood Pressure" by Pam Viele and "How to Obtain and Record Your Own Blood Pressure" by M. C. Winn, both outline a step-by-step approach to self-examination for lay persons, outlining the proper equipment, placing the cuff on the arm, inflating the cuff, utilizing the stethoscope, and determining the blood pressure reading. The fourth module, "Application of a Sphygmomanometer" by Louetta Thomson, provides a more detailed look at applying the cuff, inflating it, and reading the sphygmomanometer gauge. Each module describes and illustrates procedures, provides reinforcement exercises with immediate feedback, and concludes with a post-test and an accompanying answer key. The time required to complete the modules is specified and ranges from 15 to 30 minutes each. (JP)

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HEALTH INSTRUCTION PACKAGES

HOW TO TAKE A BLOOD PRESSURE

Modules prepared by:

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Pam Viele

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CAN YOU TAKE A BLOOD PRESSURE
PART I-BACKGROUND INFORMATION

By
Carolyn Lancaster

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TITLE:	Can You Take A Blood Pressure? Part I - Background Information
AUTHOR:	Carolyn Lancaster
INSTITUTION:	Foothill College, Los Altos, Calif.
INTENDED STUDENT:	Dental hygiene (beginning)
ESTIMATED WORKING TIME:	15 minutes
MATERIALS NEEDED:	1 Stethoscope; 1 Sphygmomanometer

FIELD TEST COPY

NOTE: This background unit, Part I in a series, is an introductory lesson for beginning students.

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INTRODUCTION

As a part of a complete medical history, the dental hygienist may be required to take an accurate blood pressure. Not only is blood pressure reading a service to the patient, but it may also be required by law at some point. The blood pressure reading can help tell the status of the body and its probable reaction to a procedure.

PART I

Overall Objective

The student will be able to define blood pressure and the equipment needed to measure it.

Sub-Objectives

The student will be able to:

1. Define blood pressure.
2. Define systolic and diastolic pressure and describe how blood pressure is recorded.
3. Identify necessary blood pressure equipment and its parts.

PRACTICE EXERCISE #1

There are three basic facts one should know about blood pressure:

1. Everyone has blood pressure. Without it the blood could not circulate in our bodies.

2. In all human beings, blood pressure varies from day to day and moment to moment.

3. When you take someone's blood pressure, you are measuring the force of the blood against the arterial walls.

Practice Question #1

Now list three facts you know about the definition of blood pressure:

1)

2)

3)

Feedback

You are correct if you included that:

1) Blood pressure is found in everyone
2) Blood pressure is the force of the blood against the arterial walls
3) Blood pressure varies from day to day and moment to moment

Now, how are you going to record blood pressure?

PRACTICE EXERCISE 2

Blood pressure is recorded by two numbers as in 140/90 (read as 140 over 90).

The first and higher number is the systolic pressure. This is the pressure in the arteries when the heart contracts to pump blood into the body.

The diastolic pressure is the second and lower number. It is the pressure in the arteries when the heart rests between beats:

Practice Question #2

To see if you have it, place an S beside the statements that define systolic pressure and a D beside the statements that define diastolic pressure.

_____1) the pressure in the arteries when the heart contracts to pump blood into the body.

_____2) the pressure in the arteries when the heart rests between beats.

_____3) the first and higher number of the blood pressure reading.

_____4) the second and lower number of the blood pressure reading.

Feedback

You've got it if your answers look like this:

1) S

2) D

3) S

4) D

So now that you know what you are going to measure, what equipment will you use to measure blood pressure?

PRACTICE EXERCISE 3

Input

The two major pieces of equipment needed to take blood pressure are (A) a stethoscope, consisting of earpieces connected to a diaphragm

and (B) a sphygmomanometer consisting of a blood pressure cuff, meter or column of mercury, tubes, and bulb with thumbscrew.

SEE NEXT PAGE FOR DRAWING OF SPHYGMOMANOMETER WITH PARTS IDENTIFIED.

Practice Question 3

Now look at the equipment issued to you with this package.

a. Can you identify the stethoscope? Yes _____ No _____

b. Locate and name the two major parts of the stethoscope (1) _____

(2) _____.

c. Can you identify the sphygmomanometer? Yes _____ No _____

d. Locate and name the four major parts of the sphygmomanometer?

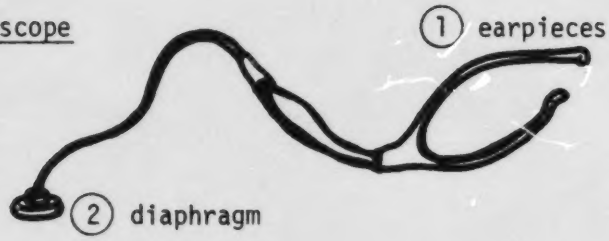
1. _____
2. _____
3. _____
4. _____

Now, prior to moving on to "Can You Take A Blood Pressure?" Part II, which is the application of what you have learned so far, take the Post-Test on page 8. Then check your answers on page 9.

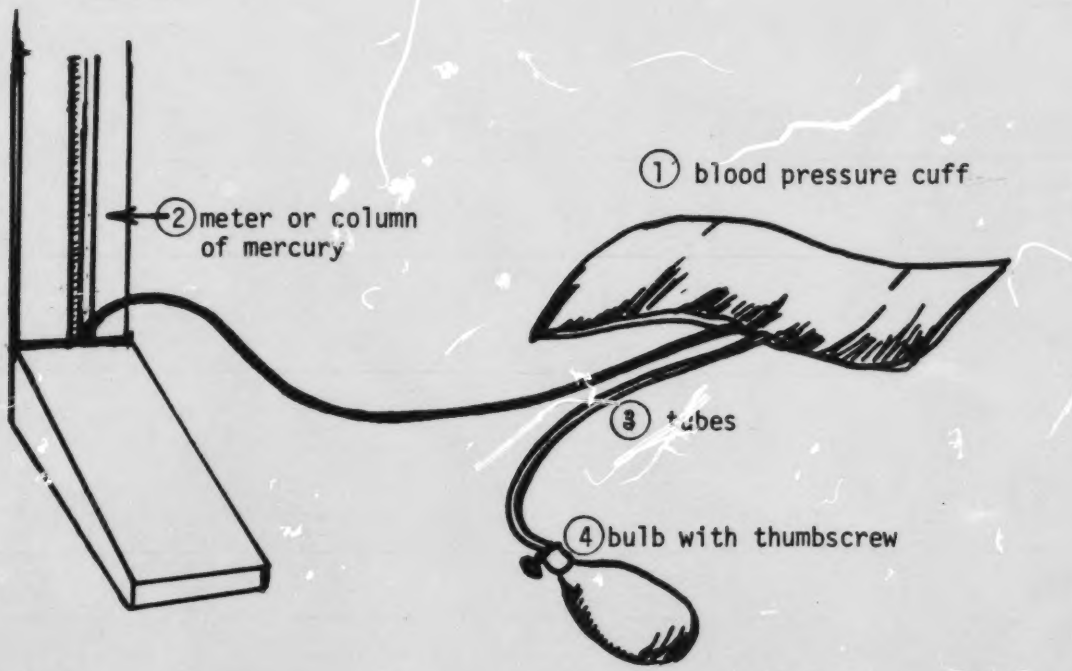
Feedback

You are correct if you identified your blood pressure equipment and parts as follows:

A. Stethoscope



B. Sphygmomanometer



POST-TEST

1. List three facts you know about the definition of blood pressure:

   a.

   b.

   c.

2. Place an S beside the statements that apply to systolic pressure and a D beside the statements referring to diastolic pressure.

   ____a. the pressure in the arteries when the heart contracts to pump blood into the body.

   ____b. the pressure in the arteries when the heart rests between beats.

   ____c. the first and higher number of the blood pressure reading.

   ____d. the second and lower number of the blood pressure reading.

Fill in the blanks:

3. a. The parts of the stethoscope are (1)_____and (2)_____.

   b. The parts of the sphygmonanometer are (1)_____ (2)_____(3)_____ and (4)_____.

ANSWERS TO POST-TEST

1. a. Blood pressure is found in everyone.

   b. Blood pressure is the force of the blood against the arterial walls.

   c. Blood pressure varies from day to day and moment to moment.

   If you did not get these answers review Practice Exercise #1, Page 2.

2. a. S

   b. D

   c. S

   d. D

   If you have not quite got it, review Practice Exercise #2, Page 4.

3. a. 1. earpieces

      2. diaphragm

   b. 1. blood pressure cuff

      2. meter or column of mercury

      3. tubes

      4. bulb with thumbscrew

   If you don't feel you know the equipment, review Practice Exercise #3, Pp. 6 and 7.

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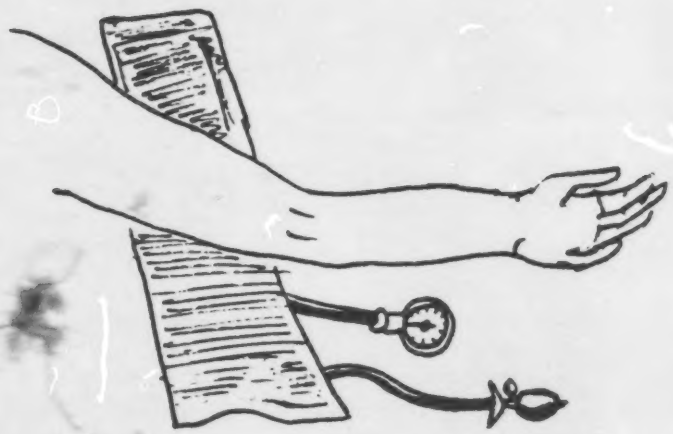
HOW TO MEASURE YOUR OWN BLOOD PRESSURE

By

Pam Viele



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TITLE:	How to Measure Your Own Blood Pressure
AUTHOR:	Pam Viele
INSTITUTION:	UCLA Family Practice Center Los Angeles, Calif.
INTENDED STUDENTS:	Patients
ESTIMATED WORKING TIME:	30 minutes
MATERIALS NEEDED:	1 Sphygmomanometer; 1 stethoscope
REVISED:	Sept. 1, 1977

NOTE: Effective use of this package requires a stethoscope and a sphygmomanometer, and a partner to check your performance.

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Introduction

You have probably had your blood pressure taken by a doctor, nurse, or another health worker. Now you are going to learn how to measure your own blood pressure. You may be wondering what reasons there are for knowing how to measure your own blood pressure. Here are just a few, and you will probably be able to think of more.

1. To help you and your doctor know what your blood pressure is under different conditions (different times of the day, at work, or home).

2. To help you learn what types of situations may influence your blood pressure and cause it to go up or down. Some people may get a little nervous when they have their blood pressure measured in the doctor's office and feel that their blood pressure goes up at this time.

3. If you are taking medicine for high blood pressure, you will be able to see how taking the medicine affects your blood pressure. As you have probably been told or read, if you are taking medicine it is very important that you continue taking it and not stop taking it without talking to your doctor.

4. To see how weight loss or weight gain affects your blood pressure.

5. To help you take an active part in your own health care.

6. It's fun.

When you start the package, you may notice that there is one word in it that is a real tongue twister - "sphygmomanometer": this is the instrument the doctor uses and which you will be using to measure your blood pressure. Don't worry if you have trouble saying "sphygmomanometer" because you won't need to be able to pronounce it in order to use it! And that's what you will be able to do after you finish this package.

It may have occurred to you that, in order to measure your own blood pressure at home, you will need to have your own equipment. The necessary equipment (sphygmomanometer and stethoscope) is sold at many department stores in a kit that is usually called a "Blood Pressure Kit". Prices and quality vary, but several discount department stores sell kits for under $20.00. Among many brands available is the $29.50 Taylor kit, which includes detailed instructions for use and upkeep. Another, the Medix Master, generally priced slightly under $20.00, can sometimes be found on sale.

Third party payers like Medicare do not pay for the kits.

Once you have the necessary equipment you will be ready to turn the page and learn how to measure your own blood pressure. Go ahead and be sure to do each of the practice exercises as you go through the package.

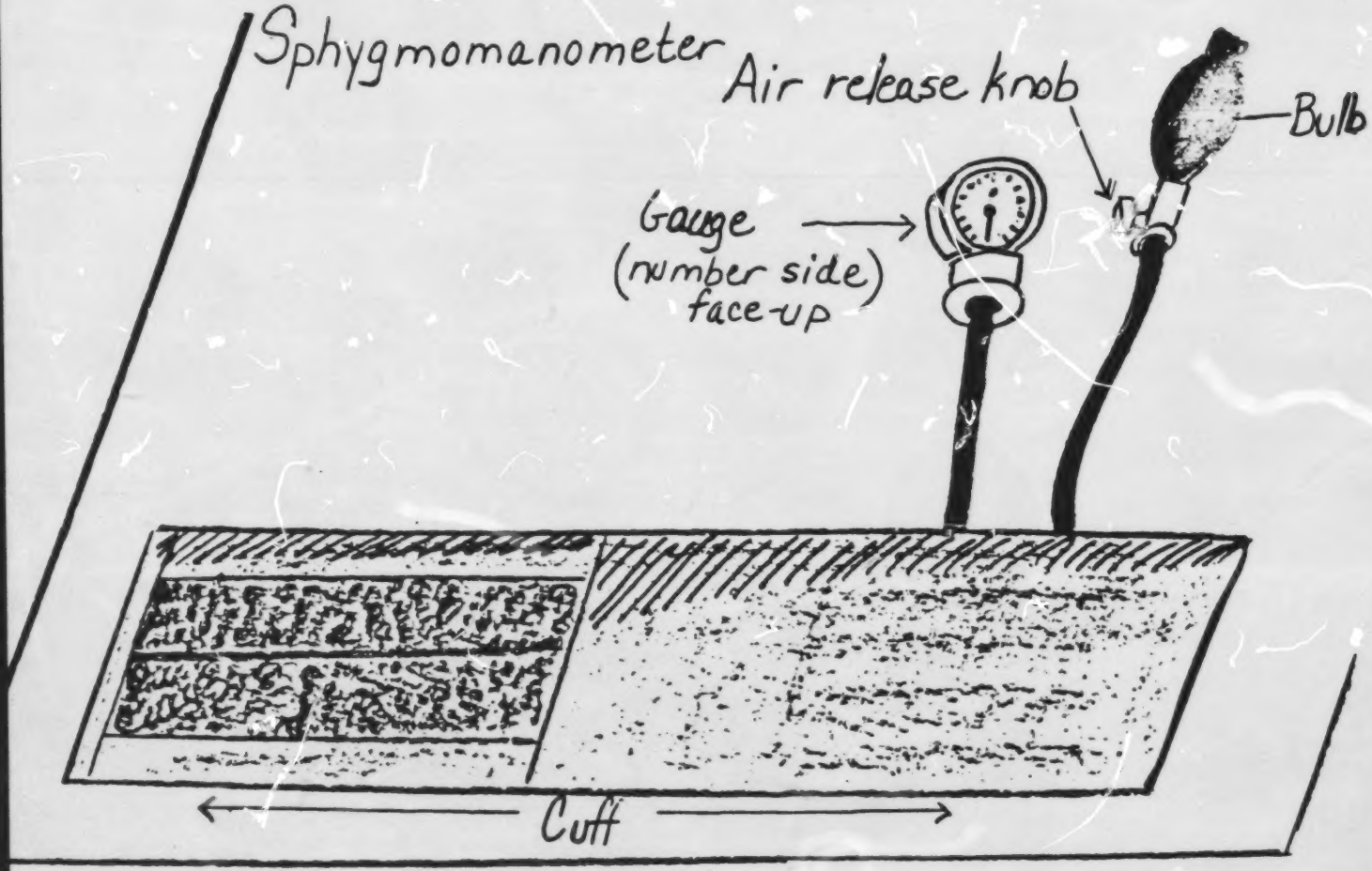
Have fun!

Practice Exercises

Input #1

To position and prepare the stethoscope and sphygmomanometer for use, you will need to complete the following 3 easy steps. Try to do them now.

Step 1: Look at the picture below.

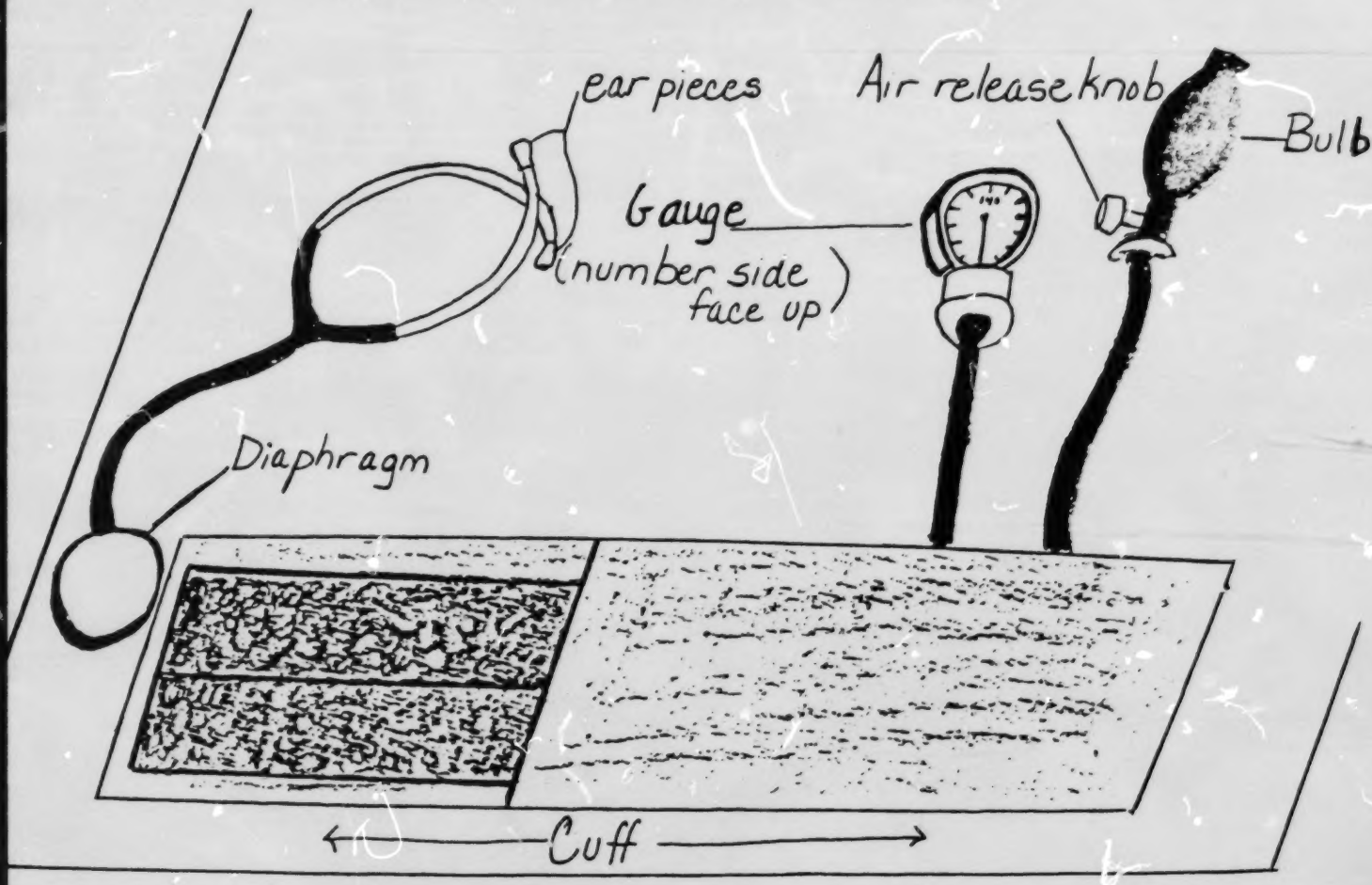


As shown in the picture, put the sphygmomanometer on the table right in front of you. Place it so the cuff is laid out flat in a horizontal position with the gauge and bulb located at the top right corner of the cuff. The gauge should be placed with the number side face up.

Step 2: Look at the next picture below

and, as pictured, hold the sphygmomanometer bulb in one hand while you tighten the air release knob with the other by grasping the knob between your thumb and forefinger and turning it clockwise (to the right) as far as it will go.

Step 3: Now all you have to do is place the stethoscope within easy reach - next to the cuff. Your stethoscope and sphygmomanometer should look something like this picture.

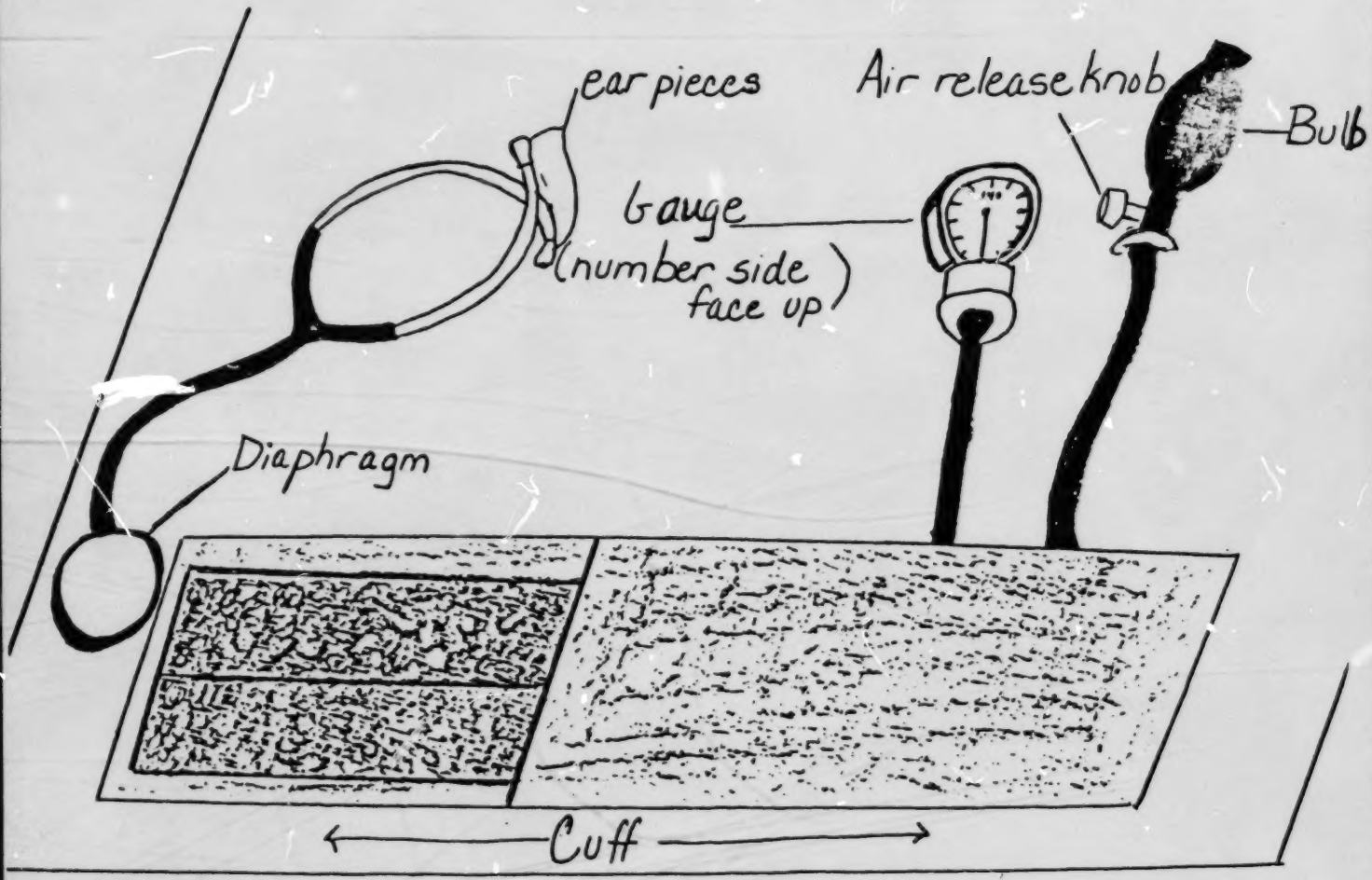


Practice Exercise #1

Check yourself without looking at the pictures by demonstrating how you would position and prepare the sphygmomanometer for use.

Feedback

Does your stethoscope and sphygmomanometer look like this picture?



Did you:

1) put the sphygmomanometer on the table right in front of you?

2) lay the cuff out flat in a horizontal position with the gauge and bulb located at the top right corner of the cuff?

3) place the gauge with the number side face up?

4) hold the bulb in one hand and tighten the air release knob with your other hand by grasping the knob between your thumb and forefinger and turning it clockwise as far as it will go?

5) place your stethoscope in easy reach next to the cuff?

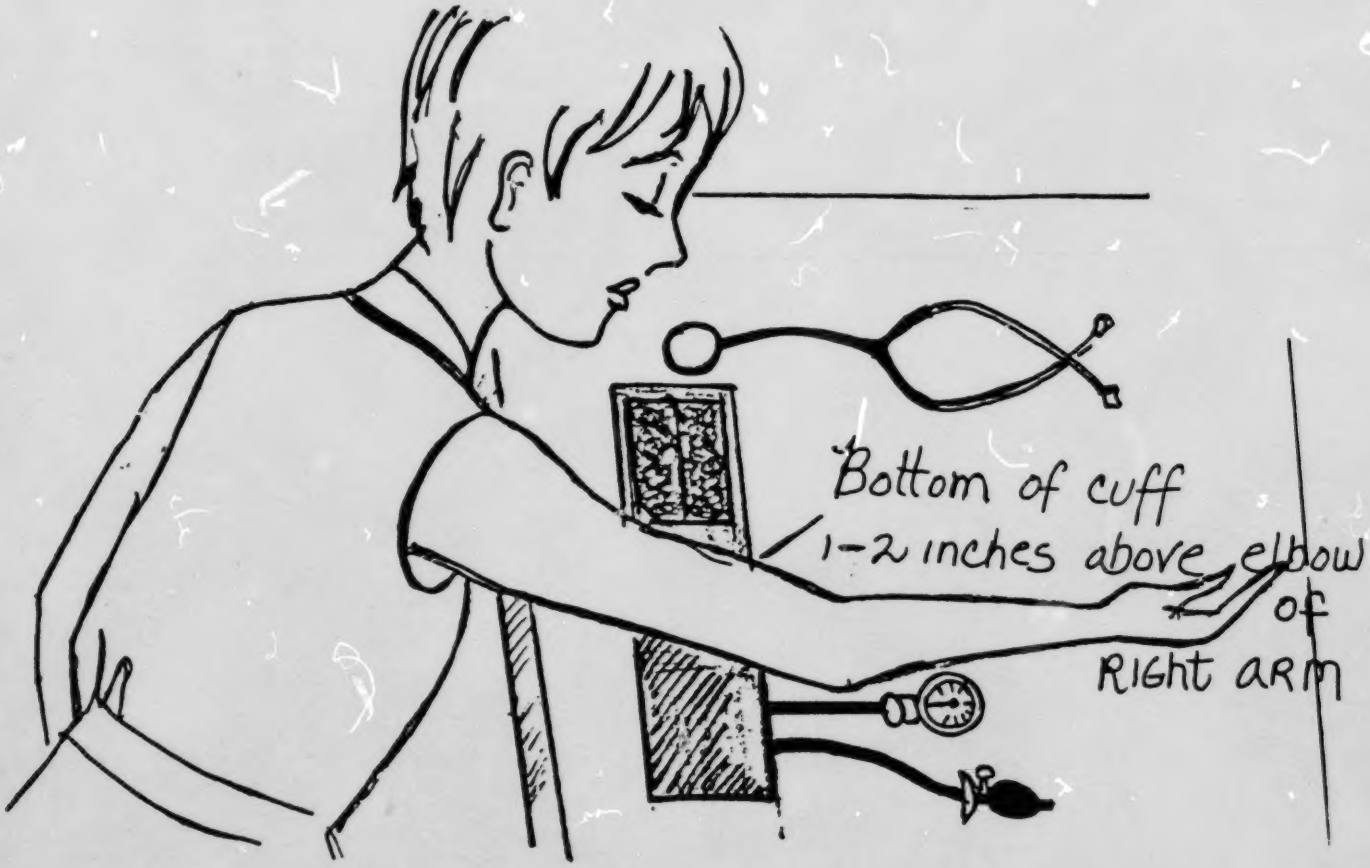
If you answered yes to each question you are doing great and can go right ahead to the next exercise.

If you missed a step, don't despair - just go back and review that step again.

Input #2

Now you are ready to position yourself and wrap the cuff around your right arm.

When positioned properly you should look somewhat like the person in this picture.

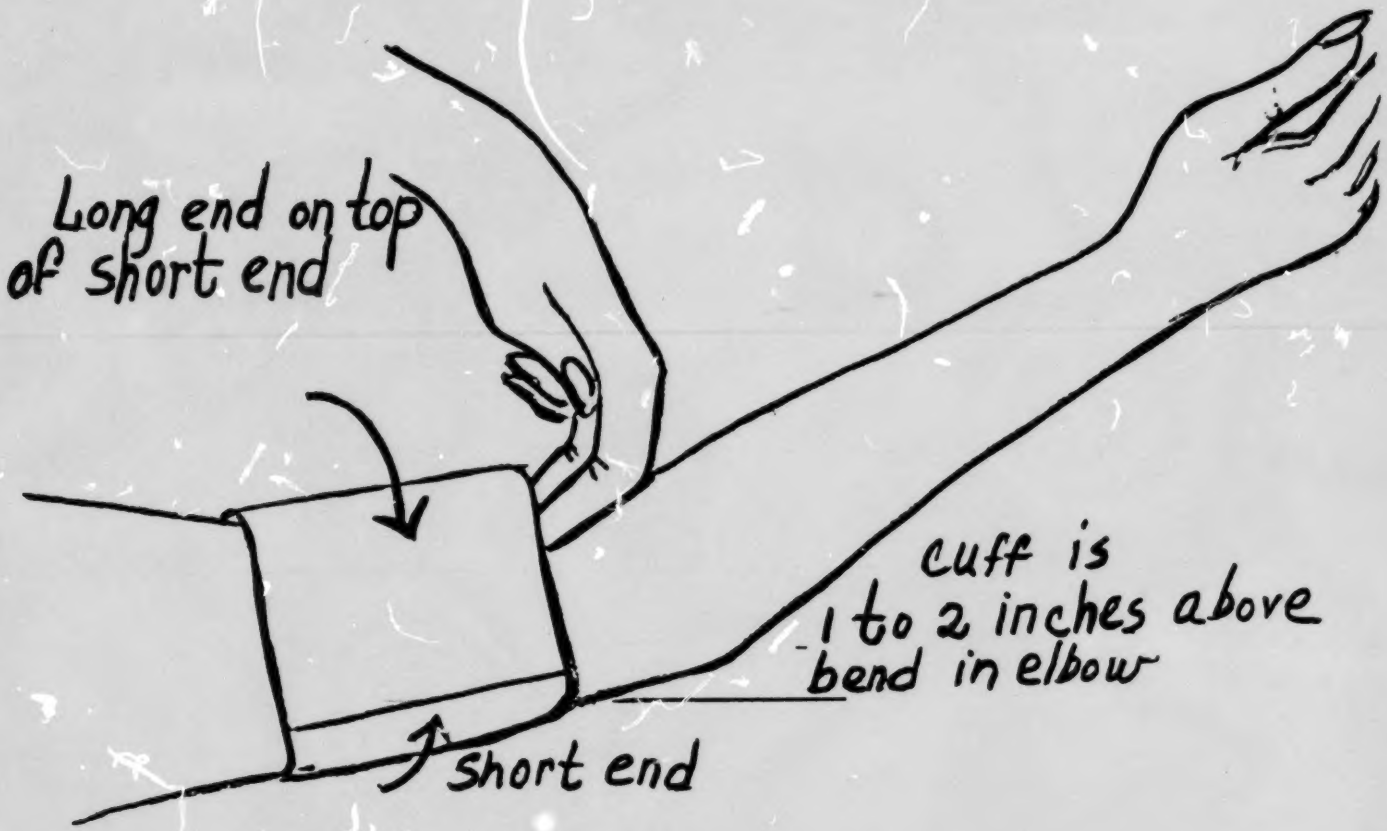


Try it. Lay your right upper arm on the cuff just to the left of the gauge. As in the picture above, the bottom edge of your cuff should be about 1-2" above your right elbow.

This next instruction may be hard to read with your arm in that position, but give it a try.

Wrapping the cuff snugly around your arm will not be easy at first. You may want to ask your partner to help you the first few times. Go right ahead and don't get discouraged. With practice you will soon be able to do it without help.

Before wrapping the cuff look at the picture below and notice how the properly wrapped cuff fits:



1) snugly, so no more than 2 of your fingers fit under the edge of the cuff.

2) about 1-2" above the bend of right elbow

3) with rough sides pressed together so long end is on top of short end.

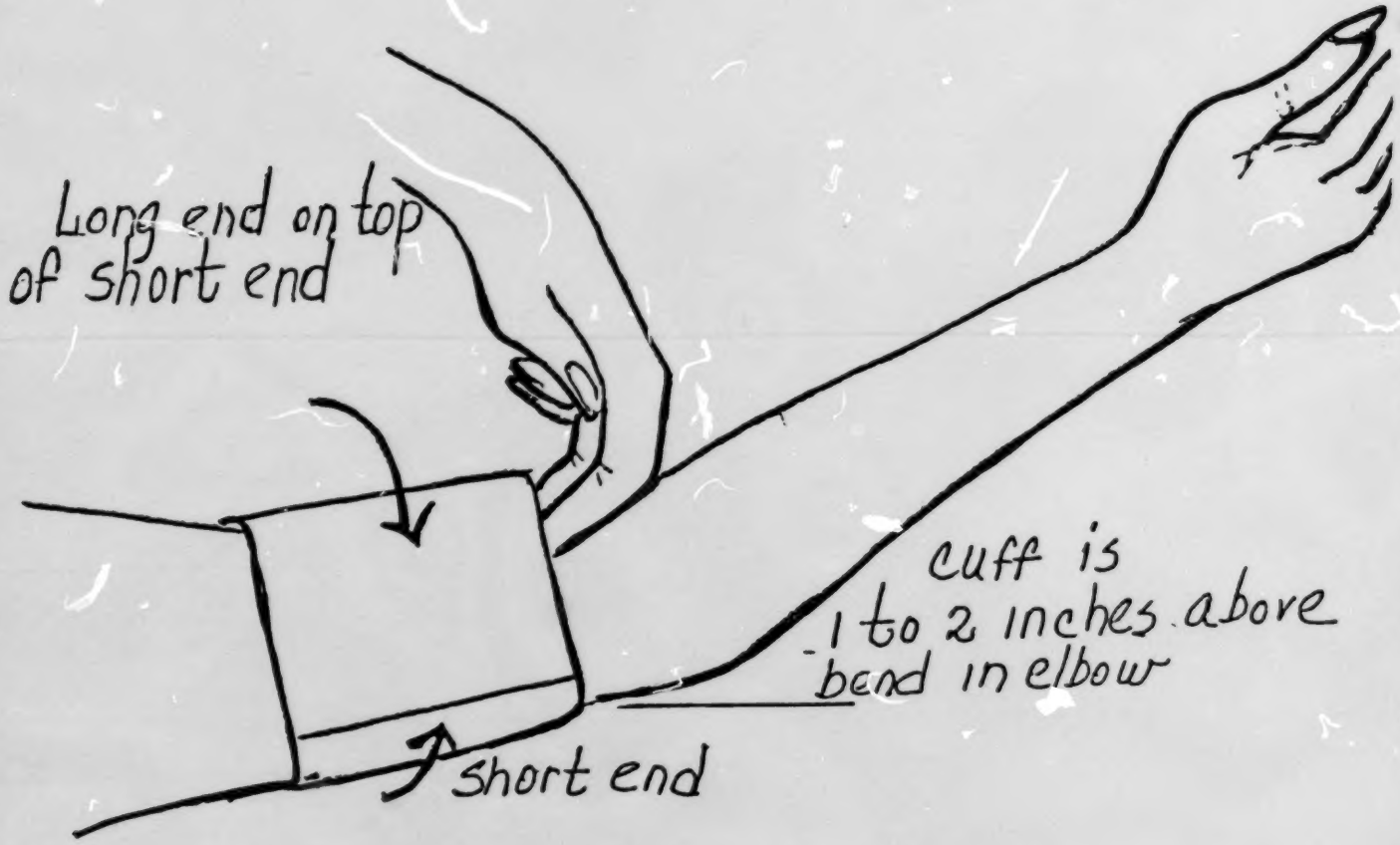
Now try wrapping it yourself by pressing the rough sides of the cuff together with the long end on top of the short end.

Practice Exercise #2

Now remove the cuff and see if you can demonstrate how to position yourself and wrap the cuff around your arm without looking at the pictures.

Feedback

You should look like the picture below.



Did you lay your right upper arm on the cuff just to the left of the gauge with the bottom edge of the cuff about 1-2" above your right elbow?

Is the cuff now wrapped snugly:

1) so no more than 2 of your fingers will fit the cuff edge?

2) about 1-2" above the bend of your right elbow?

3) with rough sides pressed together so that the long cuff end is on top of short end?

If you answered "yes" to each question pat yourself on the back and go right on to the next exercise.

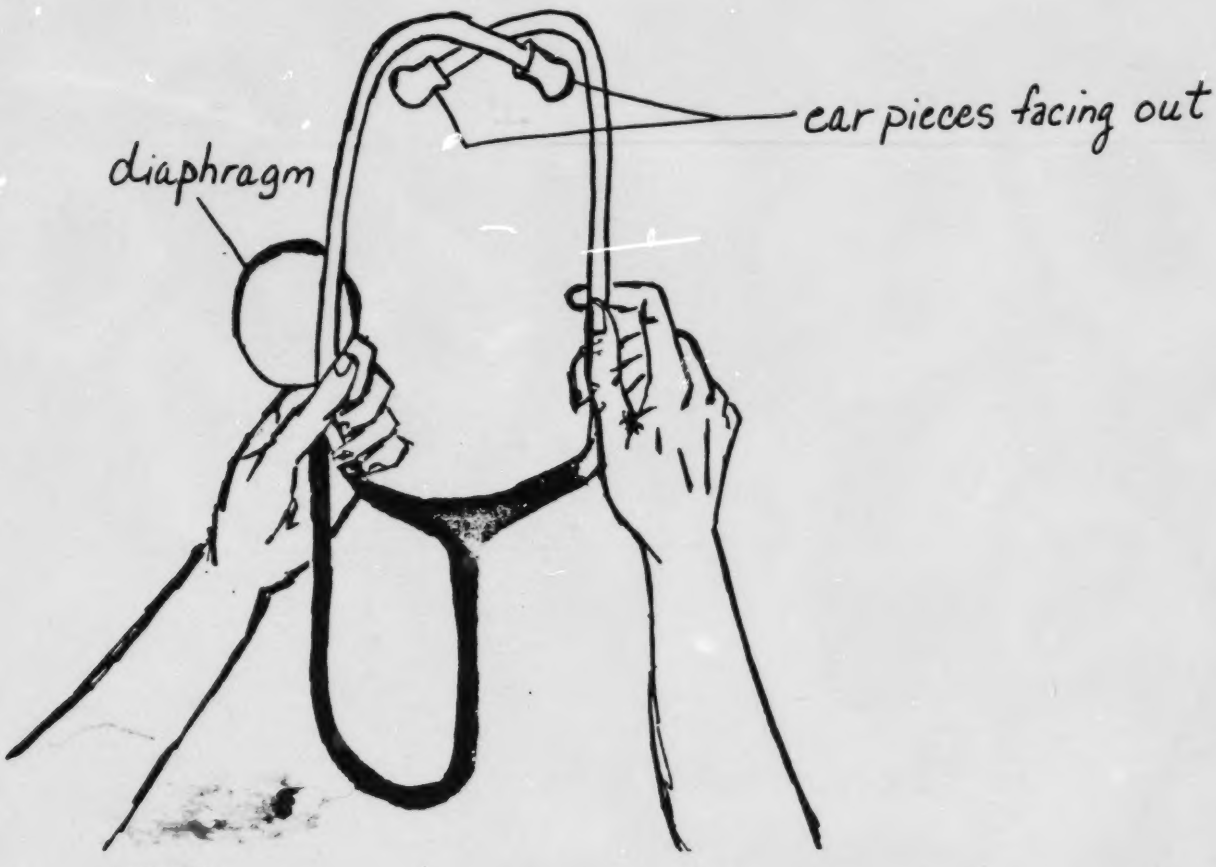
If you missed a step don't worry! Give yourself a pat on the back anyway and go back to review that step.

Input #3

Now you are ready to put on and position the stethoscope and check the sphygmomanometer gauge.

Putting on the stethoscope is easy if you do these 2 things:

1) as pictured below,

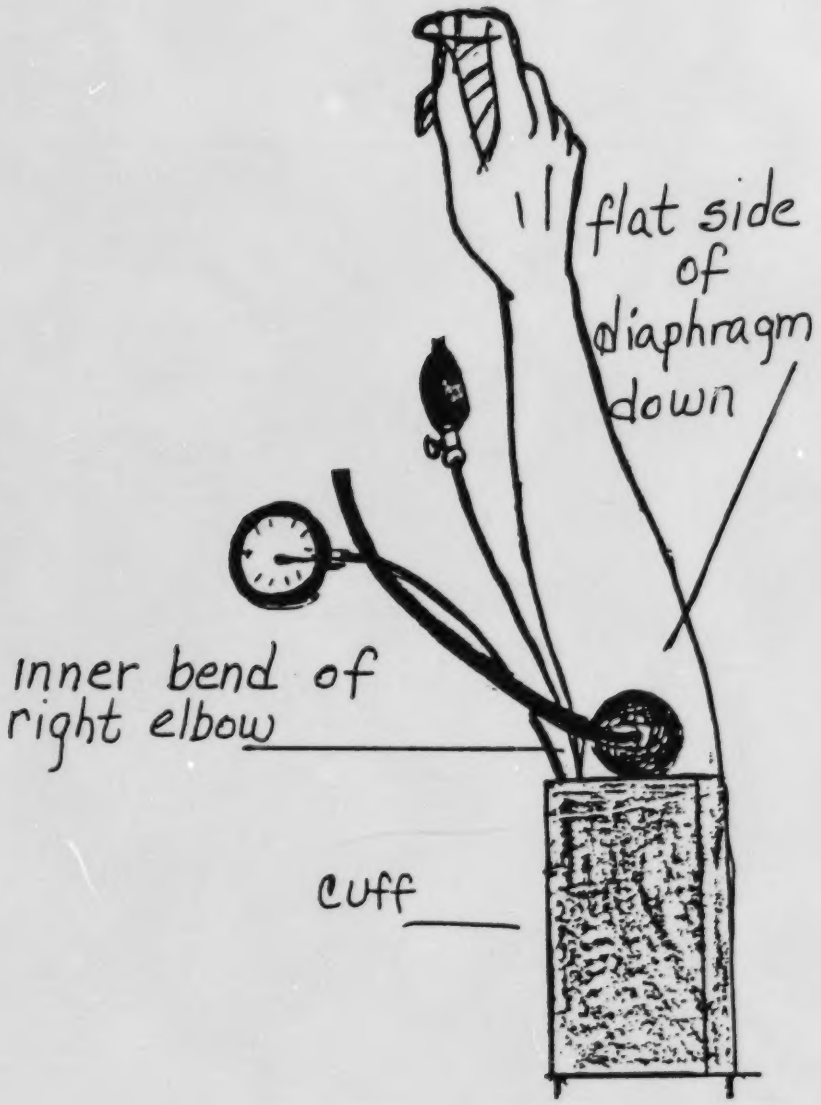


take the stethoscope and hold the diaphragm in your hand. Notice that the earpiece should be pointing away from you.

2) Next, as shown in the picture below

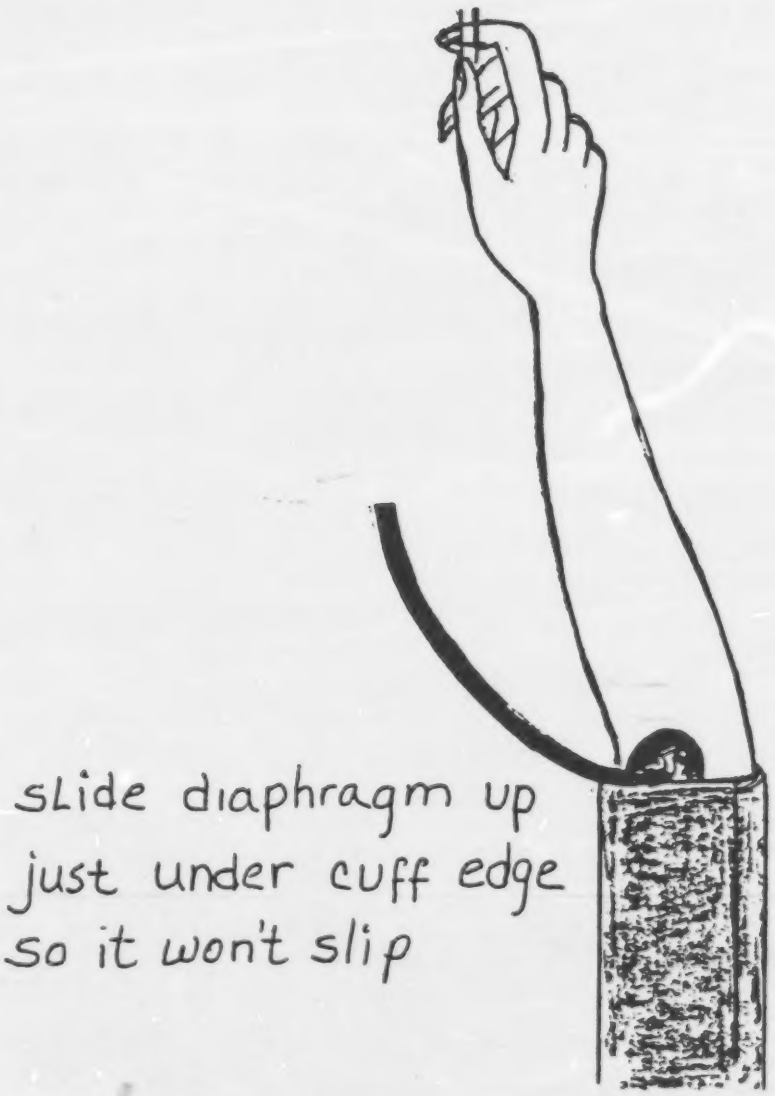
put the ear pieces in your ears.

To position the diaphragm, look at the next picture and, as shown



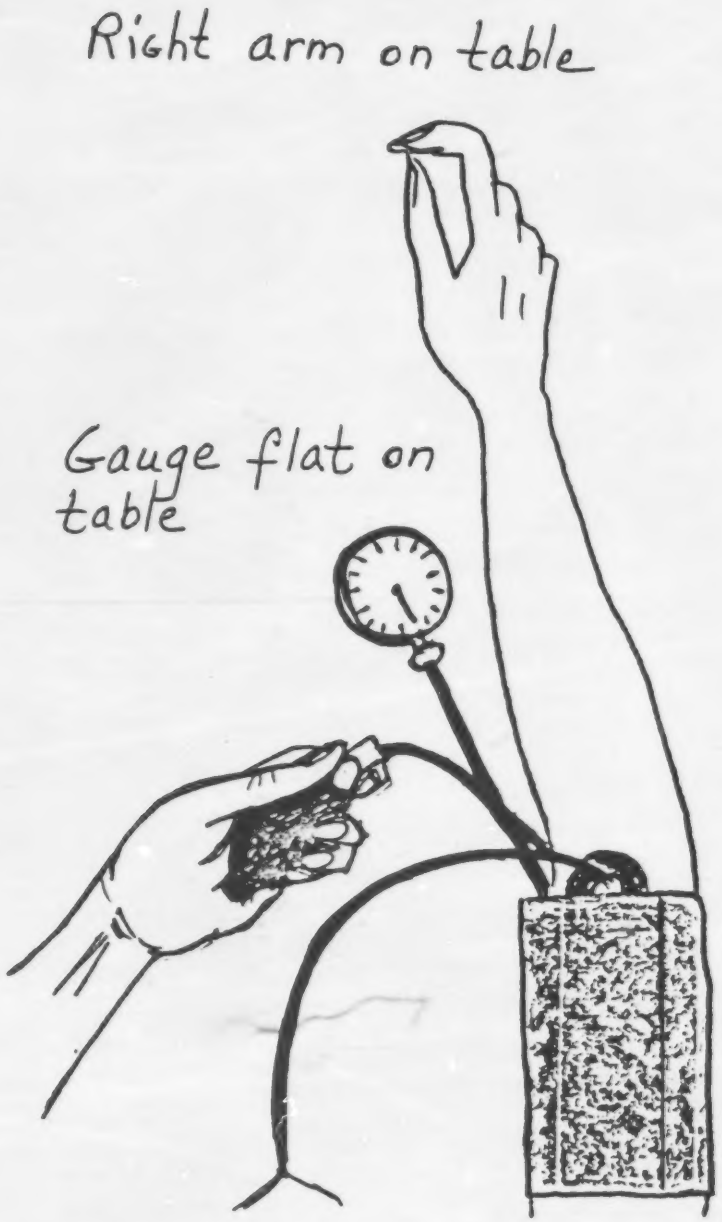
1) Place the flat side of the diaphragm over the inner part of the bend of your right elbow.

2) then, as pictured on the next page



slide the diaphragm up just under the cuff edge so it won't slip off.

Check and, if necessary, reposition the gauge so it looks like the picture below and you can read the numbers easily.

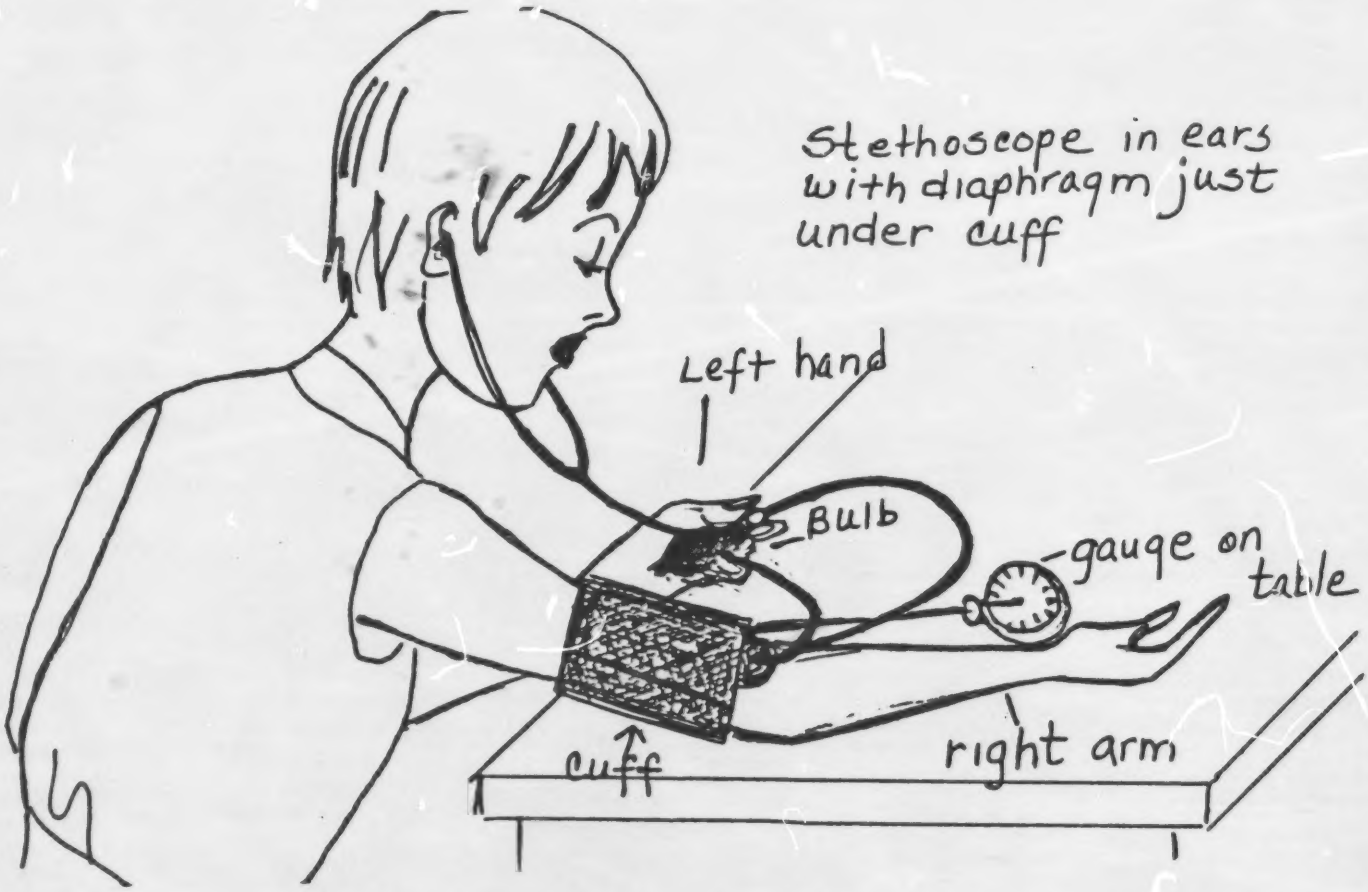


Practice Exercise #3

With the cuff wrapped around your right arm, and without looking at the picture, check your progress by demonstrating how to put on and position the stethoscope and check the gauge.

Feedback

Do you look like this picture?



Did you hold the stethoscope diaphragm in your hand as you put the earpieces in your ears?

Did you place the flat side of the diaphragm over the inner part of the bend of your right elbow?

Is the diaphragm positioned just under the cuff edge so that it doesn't slip off?

If you did each of these things, congratulations! You are doing very well and can go right on.

If you need to brush up on any step, go back and review it. You'll get it this time.

Input #4

You are ready to learn to inflate and deflate the cuff and to hear the thumping sounds of your heart as it pushes the blood through your veins and arteries. This is the most important and trickiest part of measuring your own blood pressure, so don't get discouraged if it takes some practice.

Read through the following 4 steps and look at the picture carefully to familiarize yourself with the steps.

Step 1

To inflate the cuff:

a) hold the bulb in your left hand as pictured below.

b) begin squeezing the bulb as you listen very carefully for a thumping sound. (The sound is difficult to hear. If you can't hear it from your own arm, try listening for it on someone else's arm before returning to your own.)

c) stop squeezing the bulb when the thumping sound disappears and

Step 2

Deflate the cuff by:

a) grasping the air release knob between the thumb and forefinger of your left hand as pictured above.

b) watch the needle on the gauge very carefully as you

c) slowly turn the air release knob counterclockwise (to left)

d) listen for the thumping sounds and remember the number on the gauge where the thumping sound starts (systolic) and the number where the thumping sound stops (diastolic).

Step 3

Take off the cuff and the stethoscope.

Step 4

Write down the two numbers on the last page of this package. The systolic, which will be the higher number, goes above the line and the diastolic below, for example, $\frac{120}{90}$.

After reading through the steps until you feel very familiar with them, go back and try to do each step.

Practice Exercise #4

Let your arm rest for about 5 minutes before you try this practice exercise. Now with the equipment prepared for use (stethoscope in position and the sphygmomanometer wrapped around your right arm) show how to inflate and deflate the cuff.

Feedback

When you inflated the cuff did you

a) hold the bulb in your left hand as shown

b) squeeze the bulb, listen carefully, and hear a thumping sound (systolic pressure)?

c) Stop squeezing the bulb when the thumping sound disappeared (diastolic pressure)?

Did you then deflate the cuff by:

a) grasping the air release knob between the thumb and forefinger of your left hand as pictured here?

b) slowly turning the air release knob counterclockwise while closely watching the needle on the gauge?

c) listening for the thumping sounds and remembering the number on the gauge where the thumping sound started (systolic) and the number where the thumping sound ended (diastolic)?

Did you take off the sphygmomanometer and stethoscope and write down the numbers with the systolic (higher) above the line and the diastolic (lower) below the line?

If you answered "yes" to each of the above questions, that's great and you are ready for the final self-check on the next page. Turn to it now.

If you missed, or feel uncertain about any of the steps, try them again, and then you will be ready for the final self-check too.

SELF-CHECK

Ask your partner to fill out the following checklist as you demonstrate how to measure your own blood pressure. Have your partner place a ✔ in the space next to each step you complete properly and leave blank any step which you do not carry out as described on the checklist. The next time you go to see your doctor ask her/him or a nurse in the office to watch you as you measure your own blood pressure and to check the accuracy of your results.

Checklist

_____ 1. Seated at table, places sphygmomanometer on table directly in front of self with:
   a. cuff laid out flat in horizontal position
   b. gauge and bulb located at top right corner of cuff
   c. gauge placed with number side face up

_____ 2. Holding bulb in one hand, tightens air release knob with other hand by grasping knob between thumb and forefinger and turning clockwise (to right)

_____ 3. Places stethoscope within easy reach

_____ 4. Lays right upper arm on cuff just to left of gauge so that bottom edge of cuff is about 1-2 inches above right elbow

_____ 5. Wraps cuff snugly around right arm so that:
   a. no more than 2 fingers will fit under cuff edge
   b. it is about 1 inch above the right elbow
   c. rough sides of cuff are pressed together with long end on top of short end

_____ 6. Puts stethoscope earpeices in ears while holding stethoscope diaphragm

_____ 7. Places diaphragm flat side down over inner part of bend in right arm

_____ 8. Slides diaphragm just under cuff edge so that diaphragm will not slip off

_____ 9. Checks position and if necessary repositions gauge for accurate viewing

_____ 10. Inflates cuff by grasping bulb in left hand and squeezing bulb until thumping sound is reported to disappear.

_____ 11. Deflates cuff by grasping air release knob between thumb and forefinger of left hand and turning it slowly counter-clockwise (to left)

_____ 12. Observes gauge while deflating cuff

_____ 13. Reports number where thumping sound begins (systolic) and number where thumping sound disappears (diastolic)

_____ 14. Records both numbers on card with the higher (systolic) above the lower (diastolic)

ANSWER KEY

You should not settle for less than 14 checks to show your accurate performance of this important health skill.

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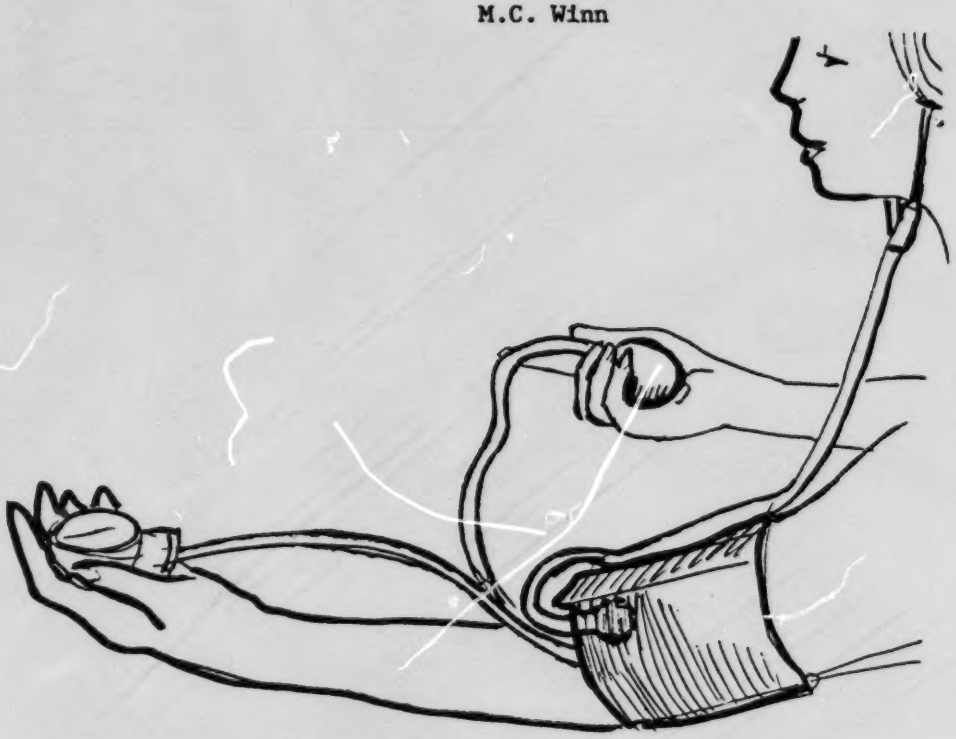
HOW TO OBTAIN AND RECORD YOUR OWN BLOOD PRESSURE

By

M.C. Winn



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TITLE:	Use of the Home Blood Pressure Kit to Take Your Own Blood Pressure
AUTHOR:	Mary Winn
INSTITUTION:	Boswell Memorial Hospital, Sun City, Ariz.
INTENDED STUDENTS:	Public
MATERIALS NEEDED:	One self-taking home blood pressure kit; table; chair

FIELD TEST VERSION

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INTRODUCTION

Perhaps your doctor has been treating you for "high blood pressure" (hypertension) and has suggested that you learn to take your own blood pressure. You have purchased a home blood pressure kit from your local friendly druggist. Now, what do you do with it?

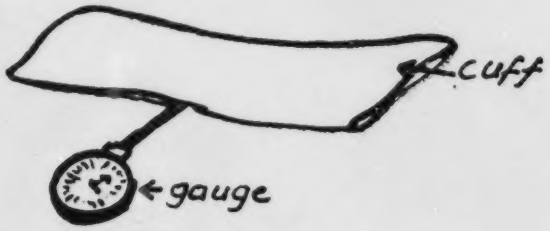
This package has been prepared to help you learn the skills needed to make the best use of the kit you have purchased. Taking a blood pressure is a skill you can acquire with practice and patience.

There is nothing mysterious about the procedure if you take it step by step.

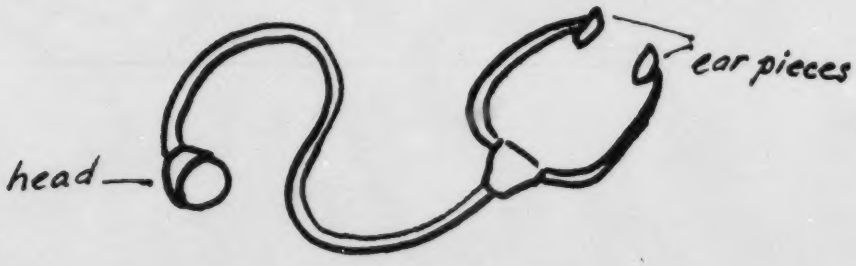
PRACTICE EXERCISE #1

Input

Blood pressure readings are obtained by using an inflated cloth cuff equipped with a pressure gauge. (See drawing below.)



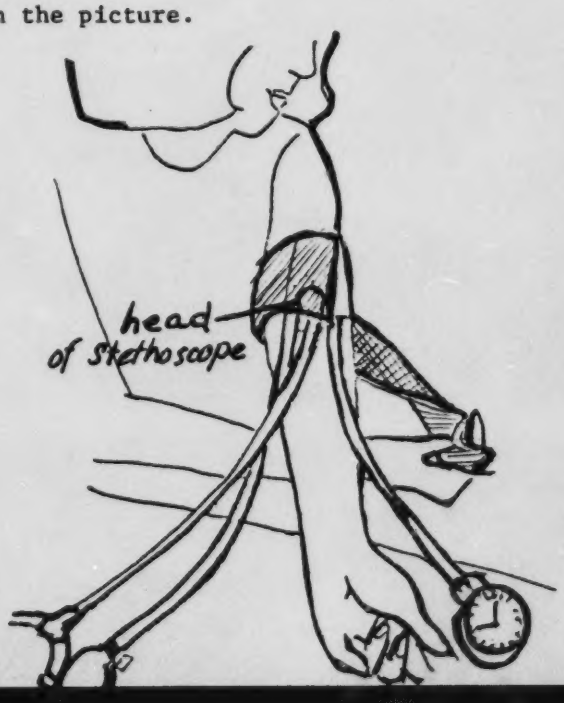
The sound of the blood pushing through the vessels in your arm is heard through a special listening device called a stethoscope, pictured below.



If you are using the self-taking kit, the head of the stethoscope is attached to the cuff. In order to obtain an accurate reading the cuff must be correctly placed on your arm. If you are right-handed, slip the cuff over your left hand and slide it up on your upper arm, as shown in the picture.

Set yourself in a chair. Roll up your sleeve. Rest your arm, palm up on a table. Unclip the gauge from the cuff. Turn the cuff so that the head of the stethoscope is on the inside of the arm, just above the elbow. (Refer to drawing)

Grasp the end of the cuff with your right hand and pull it snug. Wrap it around and over your arm, pressing the Velcro tape to fasten the cuff.



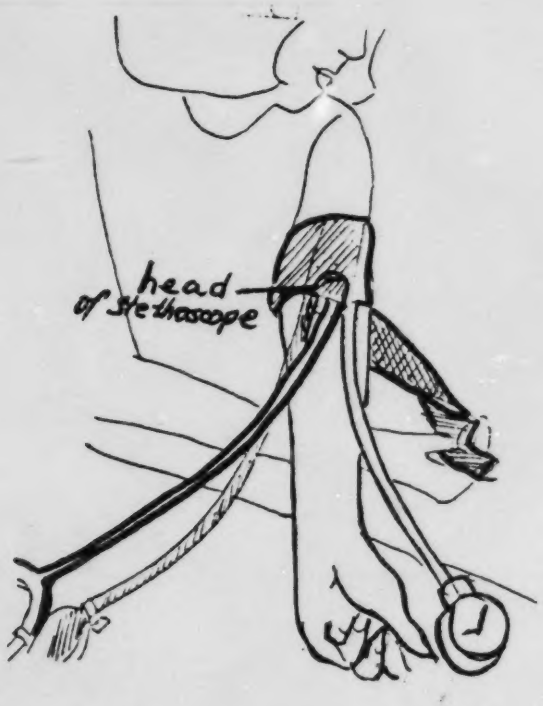
PRACTICE EXERCISE #1 (CONT.)

Practice Question #1

Without referring to the drawing below, position the pressure cuff on your left arm. Check for snugness of the wrap.

Feedback

Compare the placement of the cuff on your arm with the placement of the cuff in the drawing below.



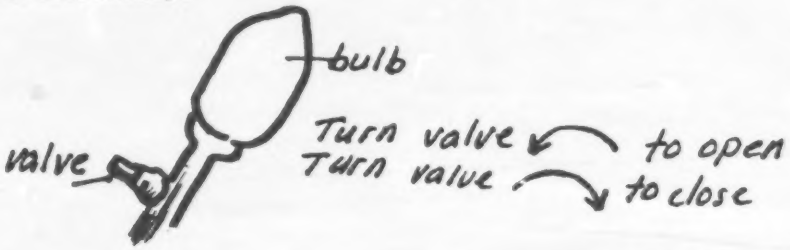
If the head rests on the inner side of the hollow of your elbow, you have correctly positioned the pressure cuff.

The cuff is wrapped snugly if it does not slip around on the arm.

PRACTICE EXERCISE #2

Input

The pressure cuff is inflated by a bulb that has an air-flow valve attached to it. This valve is closed by turning it to the right (clockwise). The valve is opened, releasing air, by turning it to the left (counter-clockwise).



Remove the cuff from your arm by pulling the Velcro tape loose. Hold the rolled cuff in your left hand. Hold the bulb in your right hand. Using the fingers of your right hand, close the valve. Squeeze the bulb repeatedly. You should feel the cuff expand in your hand.

Now open the valve, using the fingers of your right hand. Squeeze the cuff with your left hand. The cuff will collapse. At the same time, you will hear a hissing sound as the air leaves the cuff.

Practice Question #2

Position the cuff on your left arm as described and practiced in Exercise #1.
Close the valve, pump up the cuff.
Open the valve, collapse the cuff.
Remove the cuff from your arm.

Feedback

If you completely closed the valve you should have felt the cuff tighten on your arm as the pressure increased.

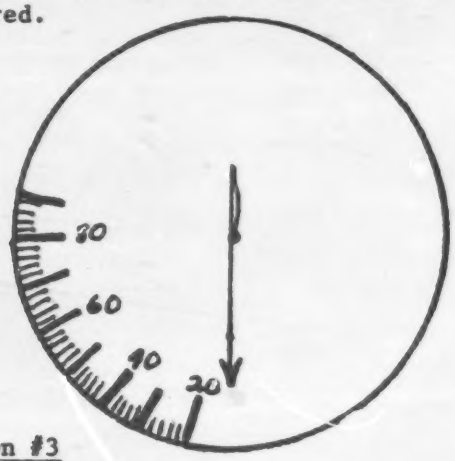
When you opened the valve you should have felt the cuff loosen as air escaped and the pressure decreased.

If you had trouble handling the valve, repeat the procedure until you can open and close the valve without problems.

PRACTICE EXERCISE #3

Input

The face of the gauge shows degrees of pressure. Each small line equals two (2) degrees of pressure. The large lines divide the face into units of ten (10) degrees. The even units of ten (10) are numbered. The uneven units of ten (10) are unnumbered.



Practice Question #3

Hold the rolled cuff in your left hand.
Hold the bulb in your right hand.
Close the valve; pump up the cuff.
Note the position of the needle on the gauge.
Inflate (pump) the cuff until the needle of the gauge points to:

(1) 96
(2) 120
(3) 148

Release the pressure.

Feedback

If the gauge and needle looked like the illustration below, you are reading the gauge correctly.

PRACTICE EXERCISE #4

Input

The sound of the blood pushing through the vessels in your arm is heard best over the large artery in the bend (hollow) of your elbow. This sound has been likened to a tapping, or thumping sound.

You can also feel this artery when you place your fingers on the bend of your elbow close to the inside of the arm.

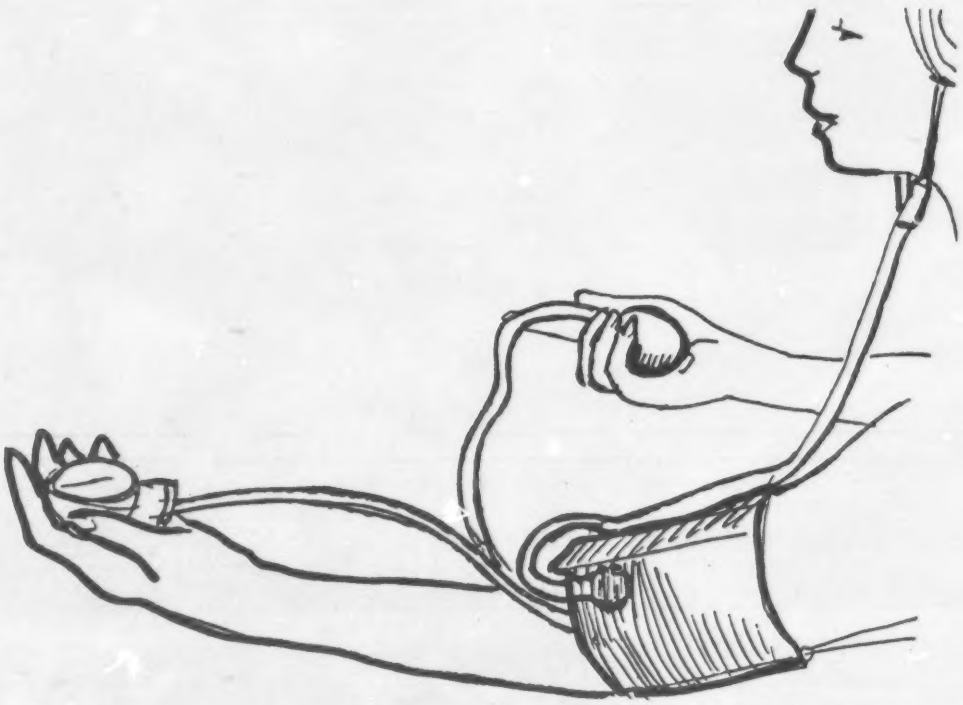
Place the cuff on your left arm as described in Exercise #1.

Locate the pulse of the artery with your fingers.

Adjust the cuff so that the head of the stethoscope is directly over the artery.

Insert the earpieces of the stethoscope into your ears.

Hold the pressure gauge in your left hand with the face of the gauge in plain view. Hold the bulb in your right hand. (See the diagram below.)



PRACTICE EXERCISE #4 (CONT.)

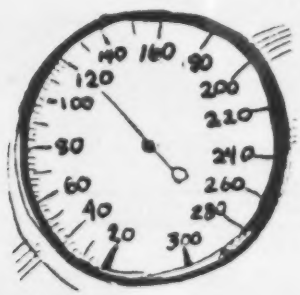
Input, cont.

Close the valve and pump up the pressure cuff. Listen for the thumping sound. The cuff is pumped up until you can no longer hear the thumping sound. Watch the gauge. When you can no longer hear the sound, continue to pump the cuff until the needle points to a mark that is thirty (30) degrees higher.

Example: Sound can no longer be heard; needle points to 110. Continue to pump up cuff until needle points to 140. Now open the valve slowly, listening for the return of the thumping sound as the cuff collapses.

The needle of the gauge should drop slowly; about one (1) to two (2) marks a second.

At the first faint, rhythmic thumping sound you hear, note the position of the needle on the gauge. This is your systolic (upper) pressure reading. The systolic reading is usually above 100 degrees.



Now allow the cuff to empty completely.

PRACTICE EXERCISE #4 (CONT.)

Practice Question #4

Position the cuff on your left arm.

Place the earpieces of the stethoscope in your ears.

Close the valve; pump up the cuff.

Take the reading of your systolic (upper) pressure.

Allow the cuff to collapse completely.

Feedback

If you heard the thumping sound as described in this exercise, congratulations! You have just heard and measured your systolic pressure.

If you could not hear the sound, don't give up. Repeat the exercise several times. You will improve with practice.

PRACTICE EXERCISE #5

Input

As you gradually release the air from the cuff the sound of the pulse beat will first get louder. It then softens to a blowing, or swishing sound, and finally disappears altogether.

At the point when you can no longer hear the thumping sound, note the position of the needle on the gauge. This is your diastolic (lower) pressure reading.

Diastolic pressure is usually below 90 degrees.

Blood pressure readings are written with the higher (systolic) reading first, followed by the lower (diastolic) reading.

Example: 130/76 130 = systolic 76 = diastolic

Practice Question #5

Re-inflate the pressure cuff to thirty (30) degrees above the point where you no longer hear the thumping sound. Open the valve, listen to the sound. Determine both your systolic (upper) and diastolic (lower) pressure readings.

Feedback

If you were successful you were able to hear the thumping sound disappear as you pumped up the cuff. It should have been heard again at some point above 100 as you slowly let the air out of the cuff. This was your systolic (upper) pressure reading.

As the cuff continued to collapse the sound should have faded out at a point somewhere below 90. This was your diastolic (lower) pressure reading.

If you could not determine at which point the sound appeared and disappeared, don't be discouraged. Repeated practice is sometimes needed before you can recognize these changes in the sounds.

PRACTICE EXERCISE FOR OVERALL OBJECTIVE

Input

You have just completed the procedure for taking your blood pressure. Important points to remember are:

1. The empty pressure cuff should be positioned evenly and snugly around the upper arm with the lower edge close to the bend of the elbow.

2. The cuff should be pumped up rapidly to a point 30 degrees above the point where sound disappears.

3. The cuff should be collapsed slowly, the needle dropping on the gauge about one-two marks a second. The rate of deflation is important for accurate readings.

4. Relax as much as possible before taking your blood pressure. If possible, rest for 15 minutes before attempting to take your pressure.

5. The systolic pressure is the higher reading. The diastolic pressure is the lower one. If your are unsure about the sound you should hear, review Exercises 4 and 5.

Practice Question

Now put all the pieces together and take your blood pressure. Write it down.

Feedback

You should have been able to hear your pulse beat (thumping sound) at a point somewhere above 100 degrees. The sound should have faded away at a point somewhere below 90 degrees.

Each person's blood pressure is different. Your pressure will vary during the day, depending upon amount of activity, whether you've been smoking, and many other things.

Your doctor should tell you what your usual blood pressure is. This will give you a reading to compare with the readings you obtain.

SELF-EXAM

1. Take and record your blood pressure three (3) separate times. Wait five (5) minutes each time before repeating the procedure. Compare the three readings for degree of accuracy

2. Do you feel you can now use your blood pressure kit correctly, since you have completed this unit?

   Yes _____ No _____

3. Was the information presented easy to follow?

   Yes _____ No _____

ANSWERS TO SELF-EXAM

1. The three separate readings should agree with $\pm$ 3°.

2-3 If you were unable to answer "yes," the author will appreciate your suggestions for improving the unit.

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A PROJECT OF THE LEAGUE FOR INNOVATION IN THE COMMUNITY COLLEGE

APPLICATION OF A SPHYGMOMANOMETER

by

Louetta Thomson

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TITLE OF PACKAGE:	Application of a Sphygmomanometer
AUTHOR:	Louetta Thomson
INSTITUTION:	Yuba College, Marysville, Calif.
INTENDED STUDENTS:	Vocational nurses
ESTIMATED WORKING TIME:	20 minutes
MATERIALS NEEDED:	Blood pressure apparatus; partner
FIELD TEST COPY:	

Note: Effective use of this unit requires a partner and, for the final demonstration, an instructor to check the procedure.

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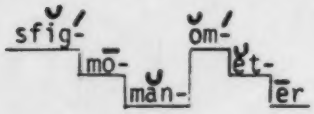
INTRODUCTION

Taking the blood pressure is one of the nurse's responsibilities. It is important for you to know how to do it correctly. This package is just one step in learning that procedure.

OBJECTIVE

Given a sphygmomanometer you will be able to demonstrate to your instructor your ability to apply the cuff, operate and read the apparatus. Because it takes two people to practice this procedure, I hope you will be willing to assist your partner. In order to improve this package for future students, I hope you will be willing to answer a few questions concerning how you feel about this package. You answers will not be graded.

The sphygmomanometer is an instrument used in taking a patient's blood pressure (B/P). That long word, sphygmomanometer, is pronounced sfig - mo - man - om - et - er. Now you try it. Say it several times. If you are having trouble, ask your instructor for help.



Very good. It really isn't so bad, is it?

You can learn to spell the word by breaking it down into syllables.

sphyg - mo - man - o - meter.

Practice Question #1

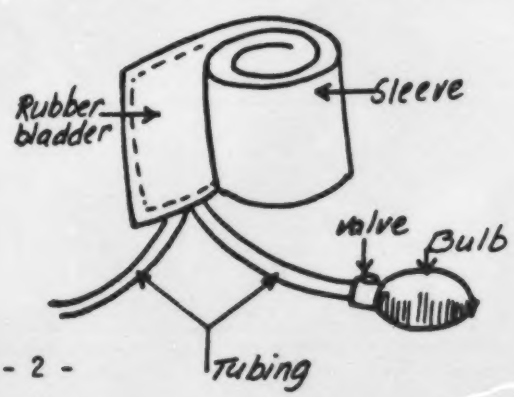
Now you try writing it. No fair peeking!

1)
2)
3)
4)
5)

Got it? Check your answer with the spelling above.

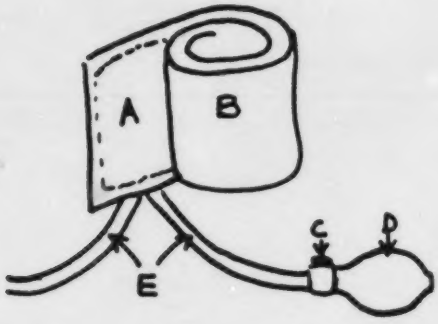
The sphygmomanometer is made up of two different parts connected together, the cuff and the dial. Let's talk about one at a time. The first one is the cuff. Look at your apparatus. You'll see that the cuff consists of:

tubing
rubber bladder
sleeve
valve
bulb



Practice Question #2

Compare the diagram with your cuff. Label the diagram.



A. _____

B. _____

C. _____

D. _____

E. _____

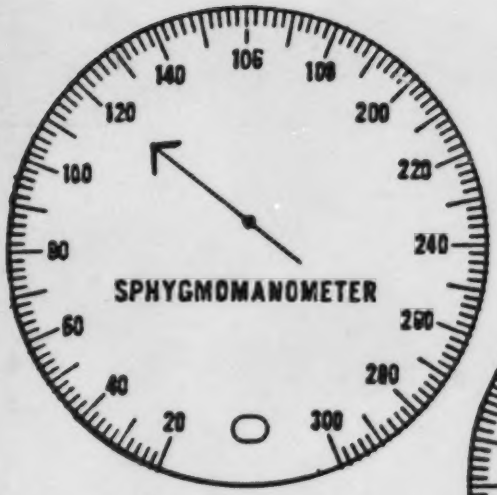
Answer

A. Rubber bladder
B. Sleeve
C. Valve
D. Bulb
E. Tubing

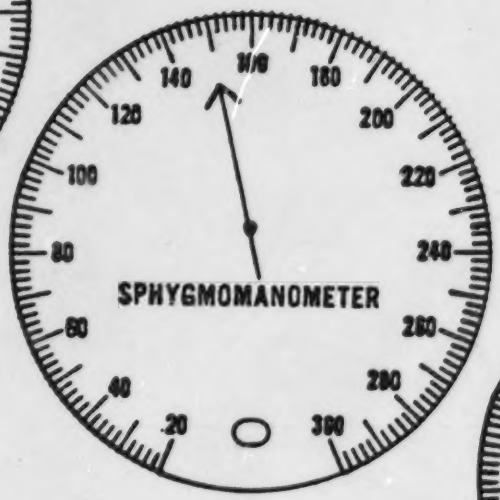
The second part of the B/P apparatus is the dial. Notice that every other long line is numbered 20, 40, 60, etc.; that alternate long lines are not numbered, which makes them 30, 50, 70, etc. Also notice that there are four smaller lines between each long line. Each one represents a count of 2, so that between two long lines you have a count of 2, 4, 6, & 8. Compare your dial with the diagram.

Practice Question # 3

Here are some diagrams of the dial with the needle pointing at different numbers. Write the reading below each dial.



1. ____



2. ____

3. ____

Answers

1) 120 2) 150 3) 96

O.K. Now you have learnt about the two parts of a sphygmomanometer. Let's see if you remember them.

Practice Question #3A

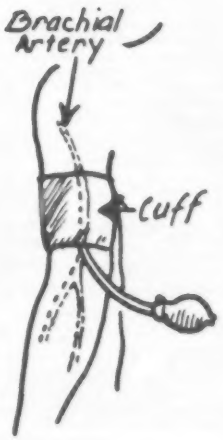
List the two parts of the sphygmomanometer.

1) _____

2) _____

1. cuff 2. dial

Very good !



The cuff is wrapped around the patient's upper arm, smoothly and snugly. It is placed so that the tubing is pointing toward the hand and the rubber bladder is on the inside of the upper arm. The lower edge of the cuff should be about 1 inch above the bend of the elbow.

Practice Question #4

Study the diagram and then see if you can answer the following questions.

(Underline the correct words.)

1) The tubing of the cuff is pointing toward the (head - hand).

2) The rubber bladder is on the (inside - outside) of the upper arm.

3) The lower edge of the cuff should be (one - two - three) inch(es) above the bend of the elbow.

Answers

1. hand 2. inside 3. one

The cuff is held in place by material call Velcro, which sticks when pressed together. Try it on your B/P cuff. Pull it apart. Did you notice the noise it made when you pulled it apart?

Practice Question #5

Do you think it would be important to warn your patient about this sound? Yes No

Why?

You are right if you said the patient should be warned. The noise sounds like something ripping, doesn't it? The patient may become very startled hearing it.

Now let's try using this apparatus. Put the cuff on your partner's arm. In order to do this, you need both hands to work with and the patient's arm must be supported. Sounds like you need three hands ! Not really. You can have the patient place his hand on your shoulder, thereby giving support or you can place the patient's arm at the side of your waist and hold it there with your upper arm. This method is used if the patient is unconscious or extremely helpless.

Practice Question #6

Fill in the blanks.

1) Are the tubes pointing _____?

2) Is the rubber bladder on the _____ of the upper arm?

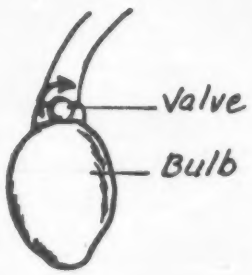
3) Is the lower edge of the cuff _____ inch(es) above the bend of the elbow?

1) down 2) inside 3) one

Right on! You're doing great.

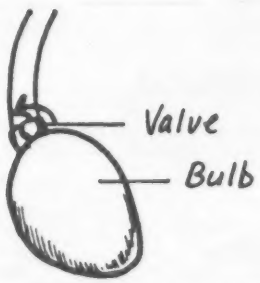
Now that you have the cuff on your partner's arm, the rubber bladder must be inflated so that the circulation can be shut off momentarily. To do this, the valve must be turned in a clockwise direction and the bulb squeezed. The bulb must be held so that the valve is pointing toward your index finger.

Inflating



To deflate the rubber bladder, the valve is turned in a counter-clockwise direction.

Deflating



Try working the valve, inflating and deflating the cuff on your partner's arm. Easy! Squeeze the bulb only once or twice.

Practice Question #7 (Underline the right word.)

1) To inflate the rubber bladder the valve must be held with it pointing toward your (index finger - thumb).

2) The valve must be turned in a (clockwise - counter-clockwise) direction to inflate the rubber bladder.

3) The valve must be turned in a (clockwise - counter-clockwise) direction to deflate the rubber bladder.

1) index finger 2) clockwise 3) counter-clockwise

Be sure the valve is turned in a counter-clockwise direction and that the rubber bladder is deflated. You don't want your partner's arm to turn blue.

You have done it! You have placed the B/P cuff correctly, you know how to inflate and deflate the rubber bladder, and you know how to read the dial. Now let's see if you can show-off to the instructor. Remove the cuff from your partner's arm and call your instructor. Show her how much you know.

(The instructor watches while the student places, operates, and reads the dial.)

Please take the post-test on the next page.

POST-TEST

Circle the right answer.

1. Where was the rubber bladder of the blood pressure cuff applied?

   a. outside of the upper arm
   b. inside of the lower arm
   c. inside of the upper arm
   d. outside of the upper arm

2. The tubing was pointing to:

   a. the hand
   b. the head
   c. the heart

There are two right answers here. Pick out those two which you think are right and circle 1, 2, 3, or 4 below.

3. In order to <u>inflate</u> the rubber bladder the valve must be:

   a. held facing the thumb
   b. turned in a counter-clockwise direction
   c. held facing the index finger
   d. turned in a clockwise direction

   (Circle one.)

   1) a, b 2) c, d 3) a, d 4) b, c

4. Read the dials below and place your answers on the line below the dial.

1) _____

2) _____

3) _____

5. Did this package give you self-confidence in applying, operating, and reading a sphygmomanometer?

	Yes	No
Applying	_____	_____
Operating	_____	_____
Reading	_____	_____

6. Which statement(s) reflect(s) your feeling about this package.

_____ not clear

_____ too time-consuming

_____ helpful

_____ relevant

_____ too long

_____ too easy

_____ boring

_____ clear

Bring your completed post-test to your instructor for evaluation.

POST-TEST ANSWER KEY

1. c
2. a
3. 2) c,d
4. 1) 180 2) 146 3) 70
5. - 6. The author hopes that the unit added to your self-confidence and that you found it clear, helpful, and relevant.

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